

MAKING SCENES

Global Perspectives on Scenes in Rock Art



Edited by

Iain Davidson and April Nowell



berghahn
NEW YORK • OXFORD
www.berghahnbooks.com

Author Copy

Published in 2021 by
Berghahn Books
www.berghahnbooks.com

© 2021 Iain Davidson and April Nowell

All rights reserved. Except for the quotation of short passages for the purposes of criticism and review, no part of this book may be reproduced in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system now known or to be invented, without written permission of the publisher.

Library of Congress Cataloging-in-Publication Data

Names: Davidson, Iain, 1948– editor. | Nowell, April, 1969– editor.
Title: Making scenes : global perspectives on scenes in rock art / edited by Iain Davidson and April Nowell.
Other titles: Making scenes (Berghahn Books)
Description: New York : Berghahn, 2021. | Includes bibliographical references and index. | Summary: “Dating back to at least 50,000 years ago, rock art is one of the oldest forms of human symbolic expression. Geographically, it spans all the continents on Earth. Scenes are common in some rock art, and recent work suggests that there are some hints of expression that looks like some of the conventions of western scenic art. In this unique volume examining the nature of scenes in rock art, researchers examine what defines a scene, what are the necessary elements of a scene, and what can the evolutionary history tell us about storytelling, sequential memory and cognitive evolution among ancient and living cultures?”—Provided by publisher.
Identifiers: LCCN 2020045534 (print) | LCCN 2020045535 (ebook) | ISBN 9781789209204 (hardback) | ISBN 9781789209211 (ebook)
Subjects: LCSH: Rock paintings--Themes, motives. | Petroglyphs. | Composition (Art)
Classification: LCC N5310 .M26 2021 (print) | LCC N5310 (ebook) | DDC 759.01/13—dc23
LC record available at <https://lcn.loc.gov/2020045534>
LC ebook record available at <https://lcn.loc.gov/2020045535>

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

ISBN 978-1-78920-920-4 hardback
ISBN 978-1-78920-921-1 ebook

Author Copy



CONTENTS

<i>List of Illustrations</i>	vii
<i>Preface</i> <i>Margaret Conkey</i>	xvii
Introduction. Behind the Scenes: Did Scenes in Rock Art Create New Ways of Seeing the World? <i>Iain Davidson and April Nowell</i>	1
Chapter 1. Scenes and Non-Scenes in Rock Art <i>Iain Davidson</i>	16
Chapter 2. The Possible Significance of Depicted Scenes for Cognitive Development <i>Livio Dobrez</i>	32
Chapter 3. Event Depiction in Rock Art: Landscape-Embedded Plan-View Narratives, Decontextualized Profile “Scenes,” and Their Hybrid Instances <i>Patricia Dobrez</i>	51
Chapter 4. Defining “Scenes” in Rock Art Research: Visual Conventions and Beyond <i>Madeleine Kelly and Bruno David</i>	67
Chapter 5. Putting Southern African Rock Paintings in Context: The View from the Mirabib Rock Shelter, Western Namibia <i>Grant S. McCall, Theodore P. Marks, Jordan Wilson, Andrew G. Schroll, and James G. Enloe</i>	75
Chapter 6. Scenic Narratives of Humans and Animals in Namibian Rock Art: A Methodological Restart with Data Mining <i>Tilman Lenssen-Erz, Eymard Fäder, Oliver Vogels, and Brigitte Mathiak</i>	90
Chapter 7. Between Scene and Association: Toward a Better Understanding of Scenes in the Rock Art of Iran <i>Ebrahim Karimi</i>	107
Chapter 8. Music and Dancing Scenes in the Rock Art of Central India <i>Meenakshi Dubey-Pathak and Jean Clottes</i>	122
Chapter 9. Hunting and Havoc: Narrative Scenes in the Black Desert Rock Art of Jebel Qurma, Jordan <i>Nathalie Østerled Brusgaard and Keshia A. N. Akkermans</i>	134
Chapter 10. Making a Scene: An Analysis of Rock Art Panels from the Northwest Kimberley and Central Desert, Australia <i>June Ross</i>	150
Chapter 11. Scene but Not Heard: Seeing Scenes in a Northern Australian Aboriginal Site <i>Madeleine Kelly, Bruno David, and Josephine Flood</i>	162

Author Copy

Chapter 12. A Comparison of “Scenes” in Parietal and Non-Parietal Upper Paleolithic Imagery: Formal Differences and Ontological Implications <i>Elisabeth Culley</i>	179
Chapter 13. Scene Makers: Finger Fluters in Rouffignac Cave, France <i>Leslie Van Gelder and April Nowell</i>	194
Chapter 14. Maps in Prehistoric Art <i>Pilar Utrilla, Carlos Mazo, Rafael Domingo, and Manuel Bea</i>	207
Chapter 15. Scenes in the Paleolithic and Levantine Art of Eastern Spain <i>Valentín Villaverde</i>	223
Chapter 16. New Insights into the Analysis of Levantine Rock Art Scenes Informed by Observations on Western Arnhem Land Rock Art <i>Inés Domingo Sanz</i>	240
Chapter 17. Rules of Ordering and Grouping in the <i>Pitoti</i> , the Later Prehistoric Rock Engravings of Valcamonica (BS), Italy: from Solitary Figures through Clusters, Graphic Groups, and Scenes to Narrative <i>Craig Alexander, Alberto Marretta, Thomas Huet, and Christopher Chippindale</i>	259
Chapter 18. Finding Order out of Chaos: A Statistical Analysis of Nine Mile Canyon Rock Art <i>Jerry D. Spangler and Iain Davidson</i>	277
Chapter 19. Interpreting Scenes in the Rock Art of the Canadian Maritimes <i>Bryn Tapper and Oscar Moro Abadía</i>	295
Chapter 20. The “Black Series” in the Hunting Scenes of Cueva de las Manos, Río Pinturas, Patagonia, Argentina <i>Carlos A. Aschero and Patricia Schneier</i>	310
Epilogue. Is There More to Scenes than Meets the Eye? <i>Iain Davidson and April Nowell</i>	327



9. HUNTING AND HAVOC

Narrative Scenes in the Black Desert Rock Art of Jebel Qurma, Jordan

Nathalie Østerled Brusgaard and Keshia A. N. Akkermans

Introduction

Pictorial and textual engravings can be found in vast numbers across the Black Desert of Northern Arabia, a basalt desert that stretches from southern Syria through northeastern Jordan into northern Saudi Arabia. The carvings were made by nomadic peoples inhabiting the desert in the late first millennium BC and early first millennium AD. The rock art is figurative in nature, depicting anthropomorphic figures such as archers and women, zoomorphic figures such as dromedaries, horses, lions, and ibex, as well as various geometric designs. The figures are depicted individually, accumulated on panels, and in scenes interacting with one another. The inscriptions, written in the Ancient North Arabian Safaitic script, are intrinsically linked to the pictorial engravings. A common composition is a rock art figure or scene associated with an inscription in which the author states his or her name and genealogy and “signs” the image.¹ Some texts also contain a narrative component in which the author states, for example, that he pastured his camels, migrated to another area, spent the winter in a particular place, or mourned the loss of a loved one. Based on these unique insights into the authors’ lives, the image emerges that these peoples were nomads who moved through the desert, subsisting at least in part on owning dromedaries and possibly ovicaprids and horses, built cairns for their dead, and worshipped a range of deities (Al-Jallad 2016; Macdonald 1992, 1993, 2006, 2012).

However, many questions about these societies remain, in particular how they operated in the desert landscape, what the nature of their ideology was, and what the role of these desert carvings was. The potential of the rock art in addressing these issues remains underutilized. A few notable studies have been conducted on particular motifs, such as women (Macdonald 2012) and equids (Macdonald 2019). But other than these exceptions, little is known about the imagery, in part because of the lack of complete and systematic surveys of the petroglyphs. As a result, much remains to be investigated about the rock art and the insights it can provide into the societies that created these carvings (cf. Brusgaard 2019).

One important, still neglected aspect is the narratives that have been created in the Safaitic rock art through the interaction between figures. The carvings depict anthropomorphs and zoomorphs together in scenes that appear to represent hunting, combat, and pastoral activities. This chapter presents the results of the first in-depth study of these scenes depicted in Safaitic rock art, based on a dataset of rock art from the Jebel Qurma region of the Black Desert in northeastern Jordan. In particular, we focus on the two most common type of scenes—those of hunting and of conflict—discussing the composition of and patterns in these scenes. This chapter also looks at the weaponry depicted in the scenes and rock art in general, as detailed study of the representation of objects can provide valuable additional information on the material culture of past societies (May et al., 2017), especially in regions with few archaeological remains. Through this detailed study, we examine the patterns and themes in the scenes and use of weapons, investigating what they can tell us about both the rock art and the desert societies in the late first millennium BC and early first millennium AD.

Safaitic Engravings

The Jebel Qurma region lies in the northeast of Jordan, approximately 30 km east of Azraq. It is part of the Black Desert, which is characterized by basalt-covered uplands, known locally as the *harra*, and surrounding

limestone plains, or *hamad* (Figure 9.1). Since 2012, the Jebel Qurma Archaeological Landscape Project of Leiden University has been carrying out surveys and excavations in this region, investigating the archaeological remains, rock art, and inscriptions.

The pictorial and textual engravings are “Safaitic,” which describes a pre-Islamic script and associated rock art from the late first millennium BC and early first millennium AD in Northern Arabia. The Safaitic engravings have been conventionally dated from the first century BC to the fourth century AD based on references to known historical events in some inscriptions; however, these can only be seen as a tentative guideline (Al-Jallad 2015: 18). Medieval and modern Arabic engravings and *wusūm*—late twentieth-century “tribal marks”—

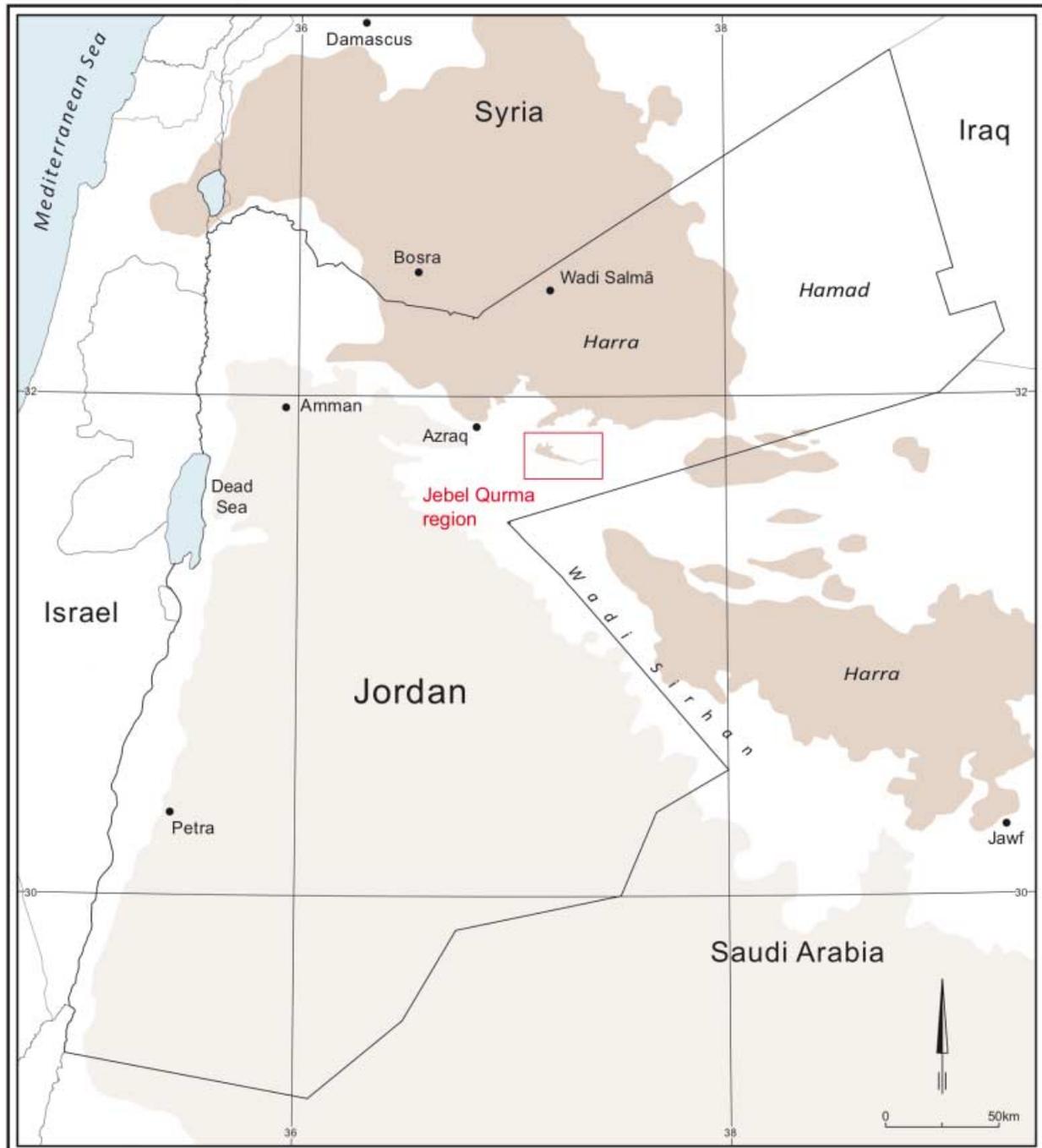


FIGURE 9.1. Location of the Jebel Qurma area in northeastern Jordan, in the Black Desert or *harra*. Copyright Jebel Qurma Archaeological Landscape Project.

have been found in the Jebel Qurma region as well, but there have been no findings of clearly prehistoric rock art such as that known from the Black Desert area northeast of the Jebel Qurma region (cf. Betts 1987).

The recent surveys of the Jebel Qurma region have led to the discovery and documentation of more than 4,500 individual Safaitic petroglyphs and more than 5,400 Safaitic inscriptions. In the rest of the basalt desert, over 40,000 inscriptions have been recorded since their discovery in 1858 (Al-Manaser and Macdonald 2017), and it is likely that almost as many rock art depictions exist. The content of the pictorial and textual engravings across the harra is quite homogeneous, although there does seem to be some stylistic diversity. More cross-regional comparisons are necessary to investigate this, especially for the rock art. The rock art depicts a large number of zoomorphic motifs and a few different anthropomorphic motifs. Geometric motifs occur as well, the most common being sets of lines or dots. Three-quarters of the figures in the Jebel Qurma corpus are zoomorphic. There are domestic animals, such as dromedary camels, equids, and dogs, of which the camel motif is by far the most common, and wild animals such as wild asses, oryx, ibex, ostriches, and lions (Brusgaard 2019). Anthropomorphic figures make up less than 10 percent of the figures; the majority of these are archers (i.e., figures holding a bow and arrow).

The engravings occur in different types of compositions. The rock art depiction is commonly accompanied by an inscription stating the author's name and referring to the image (Figure 9.2). The images can feature



FIGURE 9.2. An engraved panel from Jebel Qurma with a view of the desert landscape in the background. The panel features three Safaitic inscriptions, two of which refer to 'the she-camel'. On the left a carnivoran, four ibex, and an ostrich are depicted. In the scene on the right, a human figure holds a camel that is nursing her infant. Copyright Jebel Qurma Archaeological Landscape Project.

a single figure, such as a dromedary, or a composition of different anthropomorphic, zoomorphic, and/or geometric figures in an assemblage or scene. A scene is defined here as a composition that “reflects an action, usually with a defined theme, that can be described even if the meaning and theme are unknown” (May and Domingo Sanz 2010, 37). Therefore, in this study a scene is defined as two or more figures interacting with one another and reflecting an action, for example, hunting or fighting.

Following these criteria, 168 scenes were identified in the Jebel Qurma corpus, featuring a total of 657 figures. Five different types of scenes could be recognized: hunting, conflict and combat, leading, nursing, and mating (Figure 9.3, Table 9.1). Two additional scenes could represent an erotic scene between anthropomorphs. Though there is one scene that might depict anthropomorphs dancing, they could not be identified as such with certainty. A number of scenes that have been found in other Safaitic rock art appear to feature music making (Macdonald 2012) and ploughing (Ababneh 2005; Al-Manaser 2008), but none such have been found so far in the Jebel Qurma region. In this chapter, we briefly discuss the leading, nursing, and mating scenes before turning our attention to the two most common types of scenes: hunting and conflict/combat.

TABLE 9.1. The types of scenes depicted in the Jebel Qurma rock art and their frequency.

Type	Clear	Unclear	Total	% of total N of scenes
Hunting	93	7	100	59.5%
Conflict and combat	24	3	27	16.1%
Leading	19	0	19	11.3%
Nursing	16	2	18	10.7%
Mating	1	0	1	0.6%
Erotic	0	2	2	1.2%
Dancing	0	1	1	0.6%
Total	153	15	168	100.0%

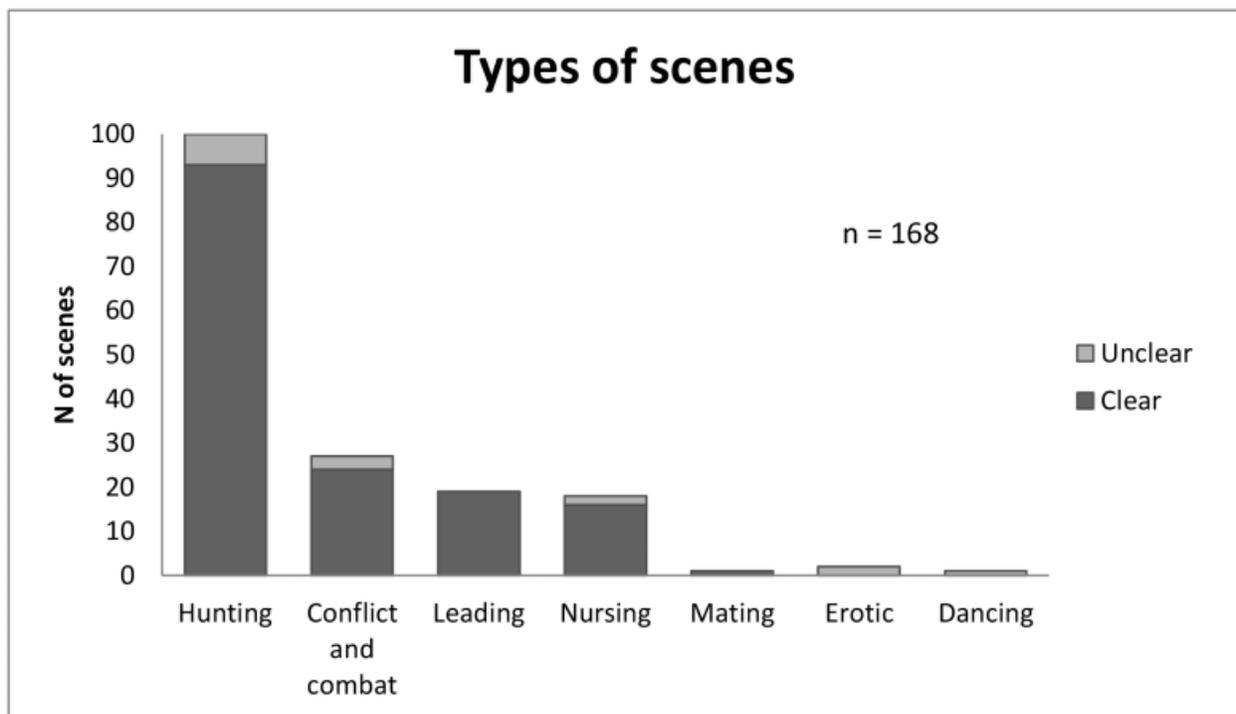


FIGURE 9.3. Stacked bar chart showing the different types of scenes and the number of times they occur in the Jebel Qurma corpus. Scenes that could clearly be identified are displayed in dark gray; scenes that were unclear are displayed in light gray. The “Unknown” category features compositions that are clearly scenes, but of which the type is unknown. Copyright Nathalie Østerled Brusgaard and Keshia Akkermans.

Pastoral Scenes

The leading, nursing, and mating scenes could all be categorized as pastoral scenes, scenes that depict herding narratives. The majority feature dromedary camels, either interacting with one another or interacting with a person. The leading (or holding) scenes depict a person leading or holding a domestic animal by what appears to be a lead rope. Most of these scenes—10 in total—feature a person holding or leading a dromedary camel. In many of these cases, the anthropomorphic figure appears to be holding rather than leading the camel as he or she is facing it. In five of the scenes, the camel also has his or her leg hobbled, indicated by a raised foreleg. There are also four scenes in which the person is holding or leading either a dromedary or an equid with a rider.² In one scene, a person is holding a female dromedary camel while a young camel nurses from it (Figure 9.2).

The nursing scenes portray female zoomorphs, primarily camels, with a young between their legs with its head facing up towards the mother's belly as if drinking from her. There are 15 of these nursing scenes and two possible ones. In nine of these cases, the mother's udders are also depicted. In the scenes featuring camels, the mother is generally depicted in detail while the young is simple and lacks detail.

Lastly, there is one scene that appears to depict mating between two dromedary camels. It shows a male camel, depicted with phallus, partially on top of a female camel.

Hunting

Hunting scenes are classified by the depiction of humans hunting animals or animals hunting other animals (figure 9.4). They are the most common of all the scenes; there are 93 clear hunting scenes and an additional seven that probably depict hunting. There is a total of 467 figures featured in these scenes. Hunting scenes thus make up 59.5 percent of the scenes, making them the most common theme in the rock art. On average, hunting scenes feature a large number of figures compared to the other types of scenes; some scenes feature up to between 10 and 21 figures.

The scenes show two different types of hunting with regard to the method used to hunt by humans or animals: solitary and cooperative hunting. Solitary hunting is classified as one predator (human or animal) hunting the prey. There are four variations on solitary hunting in the rock art: a solitary human, a solitary human on a mount (usually an equid), a human hunting with a dog, and a solitary animal hunting. Cooperative hunting is classified as two or more predators hunting the prey. There are four similar variations: two or more humans hunting, one or more human(s) hunting together with a person on a mount, two or more humans hunting with dogs, and two or more animals hunting together (Brusgaard 2019).

Classifying the hunting scenes by the hunting method reveals that the type and number of prey vary depending on the type and number of hunters (Brusgaard 2019, Table 4.18). Altogether, solitary hunting scenes are more frequent than cooperative hunting scenes (77 scenes versus 22). The most commonly depicted type of hunting is the solitary human on foot. The second most common type is the single person on a mount, followed closely by solitary animals hunting. The solitary human hunter is almost always an archer and they are commonly depicted either hunting the wild ass or a bovid that could be either an ibex or gazelle.³ Interestingly, the wild ass is almost exclusively hunted by the solitary archer (Figure 9.4b). In comparison, the human on a mount (usually a horse or mule) is most frequently portrayed hunting an oryx (figure 9.4c). Most of the solitary animal predators are canids, but there are also a few more generic-looking carnivorans and one lion hunting. The most common prey is the ostrich, almost always depicted in flocks, followed by the ibex/gazelle. There are only six scenes featuring a solitary person hunting with a dog. In the majority of these scenes, the human and dog are hunting flocks of ostriches. There are no scenes of a single person hunting with more than one dog.

The most common type of cooperative hunting depicted is animals hunting together; the majority of such scenes depict a pack of canids (Figure 9.4d). They are often shown hunting a flock of ostriches, but occasionally also ibex/gazelles and oryx. There are three scenes in which lions are hunting together. One depicts two lions attacking a camel, while the other two show two lions hunting a flock of ostriches. The second most common type of cooperative hunting is humans hunting together with dogs, depicted in seven scenes (Figure 9.4a). The majority of these scenes feature archers, usually two but sometimes three or four,

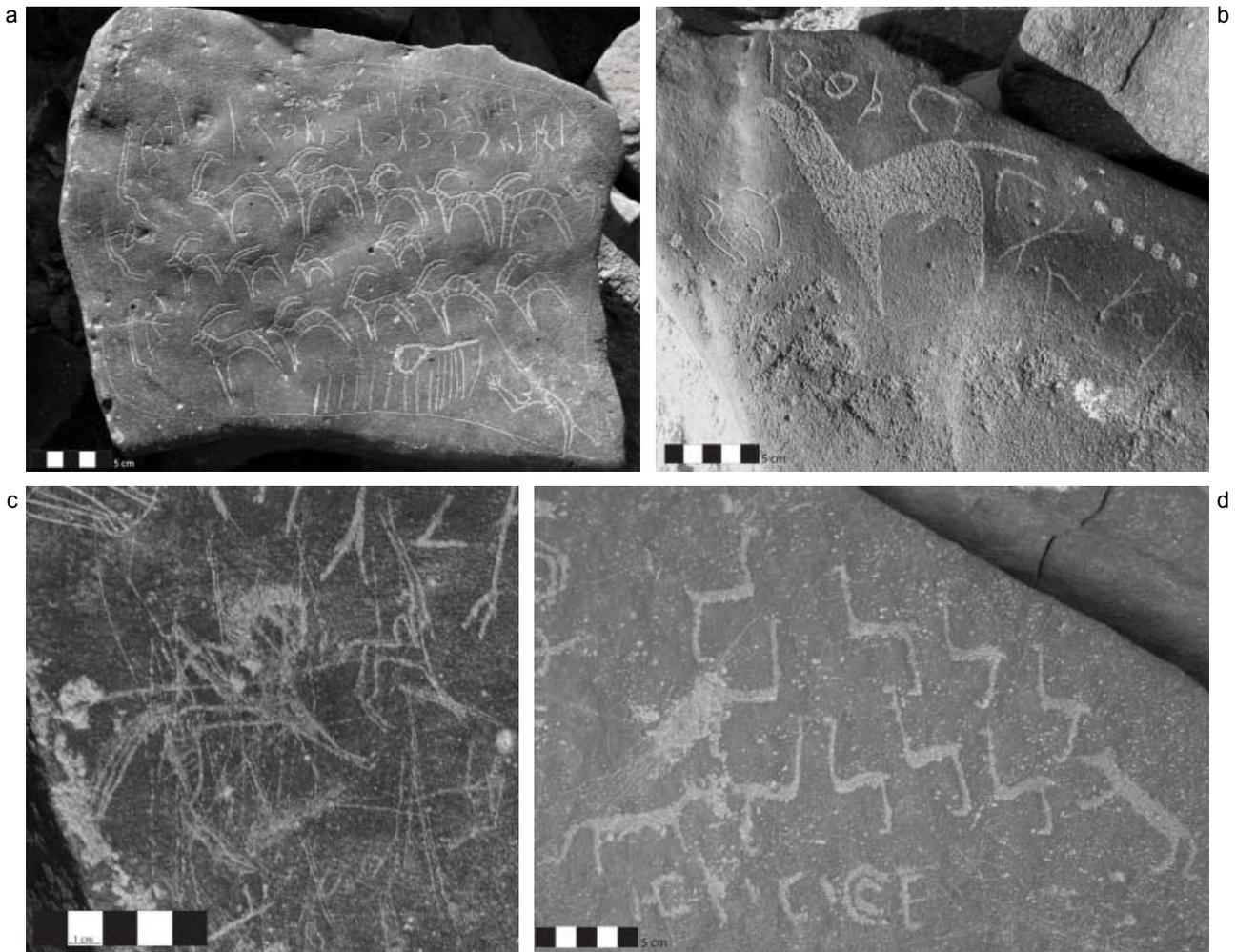


FIGURE 9.4a–d. (a) A cooperative hunting scene depicting three archers (on the left) and two dogs (on the right) hunting a herd of bovids, either ibex or gazelles. The bovids have striped patterning on their bodies. Copyright Jebel Qurma Archaeological Landscape Project. (b) A solitary hunting scene in which an archer, upside down, faces a male wild ass. The seven dots on the right are a common motif in the rock art. The inscription on the right is made using the same technique as the archer and refers to the wild ass (“the ass”). Copyright Jebel Qurma Archaeological Landscape Project. (c) A rider on an equid hunts a lone oryx, possibly with the help of an archer (bottom right). The inscription, only partially visible here, refers to “the she-ass.” The equid is therefore probably a female mule. It also has patterning on its body. Copyright Jebel Qurma Archaeological Landscape Project. (d) Two canids surround a flock of ostriches. The inscription states the carver’s name. Copyright Jebel Qurma Archaeological Landscape Project.

together with one dog. In contrast to the single hunter with a dog, they are usually hunting bovids and rarely ostriches. In addition, there are five scenes of humans hunting on foot together with a person on a mount. In most cases, they are hunting oryx. Lastly, there is one scene depicting a large group of people on foot and one person on an equid attacking a lion.

The least frequent of all the types of hunting scenes is the cooperative hunting between only humans on foot. There are only two scenes that depict this. Both scenes feature two people hunting one or two lions. It is also possible that these scenes depict people defending themselves from lions rather than hunting them.

The most frequently hunted animal is the ostrich and the most common hunter is the archer. Canids are also depicted often—28 times. It is important to note that many of these may represent dogs as they look very similar to them, but because there is no human depicted, it cannot be said with certainty that it is a

domestic canid. Archers occur most frequently; they are depicted in 44 different scenes. They are followed by ostriches (29 scenes), oryx (24 scenes), and equids with riders (20 scenes). Dromedary camels, with or without rider, are rare in the hunting scenes.

Conflict and Combat

Twenty-four scenes depict conflict and combat, and three scenes also appear to do so but are unclear. Two of these scenes differ from the rest in that they feature fighting between animals. Both depict two male camels that appear to be fighting. The camels are facing each other with their necks crossed in the manner seen when bull camels fight.

The other twenty-four conflict and combat scenes all feature humans with weapons. These scenes can be broadly divided into two categories: scenes depicting general combat or conflict, and scenes depicting raiding. The first category features narratives of fighting that take place in contexts that are unclear. There are thirteen scenes in which this is the case. Two of the scenes depict people on horseback fighting each other, and one depicts two archers fighting each other. Ten scenes feature a person on a mount fighting one or more anthropomorphs on foot (Figure 9.5a). In the majority of these scenes, the person's mount is an equid, either a horse or a mule. The riders are always either holding what could be a lance or spear (see *Weaponry* below) or apparently not holding any weapon.

The second category is scenes that appear to depict raiding. The existence of raiding as an 'activity' among the desert nomads is evidenced by the Safaitic inscriptions (cf. Al-Jallad 2015; OCIANA 2017). For example, 'By Ngs² son of 'm son of Grm and he was on a raid so and he was lying in wait'⁴ and 'By 'n'm son of 'bt and he grieved for his raiding party'.⁵ In the Jebel Qurma corpus, there are several attestations of raiding (Della Puppa forthcoming). One of these is associated with an image depicting three riders with weapons on camelback. The camels appear as if in movement. Macdonald (1990) has also identified raiding scenes in Safaitic rock art based on the occurrence of scenes in which a person on a mount is touching a camel with his or her spear. Macdonald (1990) argues that these are not scenes depicting the hunting of camels, but the raiding of camels, whereby the victor touches his "booty" with a spear to indicate that it is his. This interpretation is the most plausible considering the epigraphic evidence for raiding and the broad time period to which this rock art belongs, within which wild camels no longer existed in Arabia and the dromedary camel had already long been domesticated (Almathen et al. 2016; Rosen and Saidel 2010). In the Jebel Qurma corpus, there is one scene very similar to the ones described by Macdonald. In this scene, two riders on dromedary camels are depicted alongside a male dromedary camel without rider. One of the riders is touching the male dromedary with what appears to be a spear (figure 9.5b). Following on the argument laid out by Macdonald (1990), this scene depicts a raid in which a camel is being claimed.

According to the epigraphic evidence, raiding occurred among these desert societies and the pictorial engravings appear to support what is mentioned in the texts. Following on this evidence and the argument of Macdonald (1990), it may be possible to identify some of the combat and conflict scenes as representations of raids. There are eight scenes in which people are fighting each other around a dromedary camel. In several of these, the camel is also being held by an anthropomorph, as if being held back from the raiders (Figure 9.5c). In three of them, a person on horseback forms part of the attack (Figure 9.5d). Between three and nine anthropomorphs are involved in these scenes, either facing each other with weapons as if actively fighting, holding the camel, or riding the camel or equid. We propose that these are all scenes that portray a conflict or combat in the context of a raid.

In all of these scenes, the anthropomorphic figures are depicted in small dimensions and lack any detail. The dromedary camel in the scenes are portrayed large, detailed, and in the centre of the scene. They therefore draw the visual focus of the scene.

Weaponry

Many of the hunting and conflict/combat scenes feature the use of weaponry in them. They are not depicted prominently in the rock art and, like the anthropomorphs, are rarely depicted in detail. Yet a close study of the weapons can provide interesting insights. This has been demonstrated by notable works such as that by

Author Copy

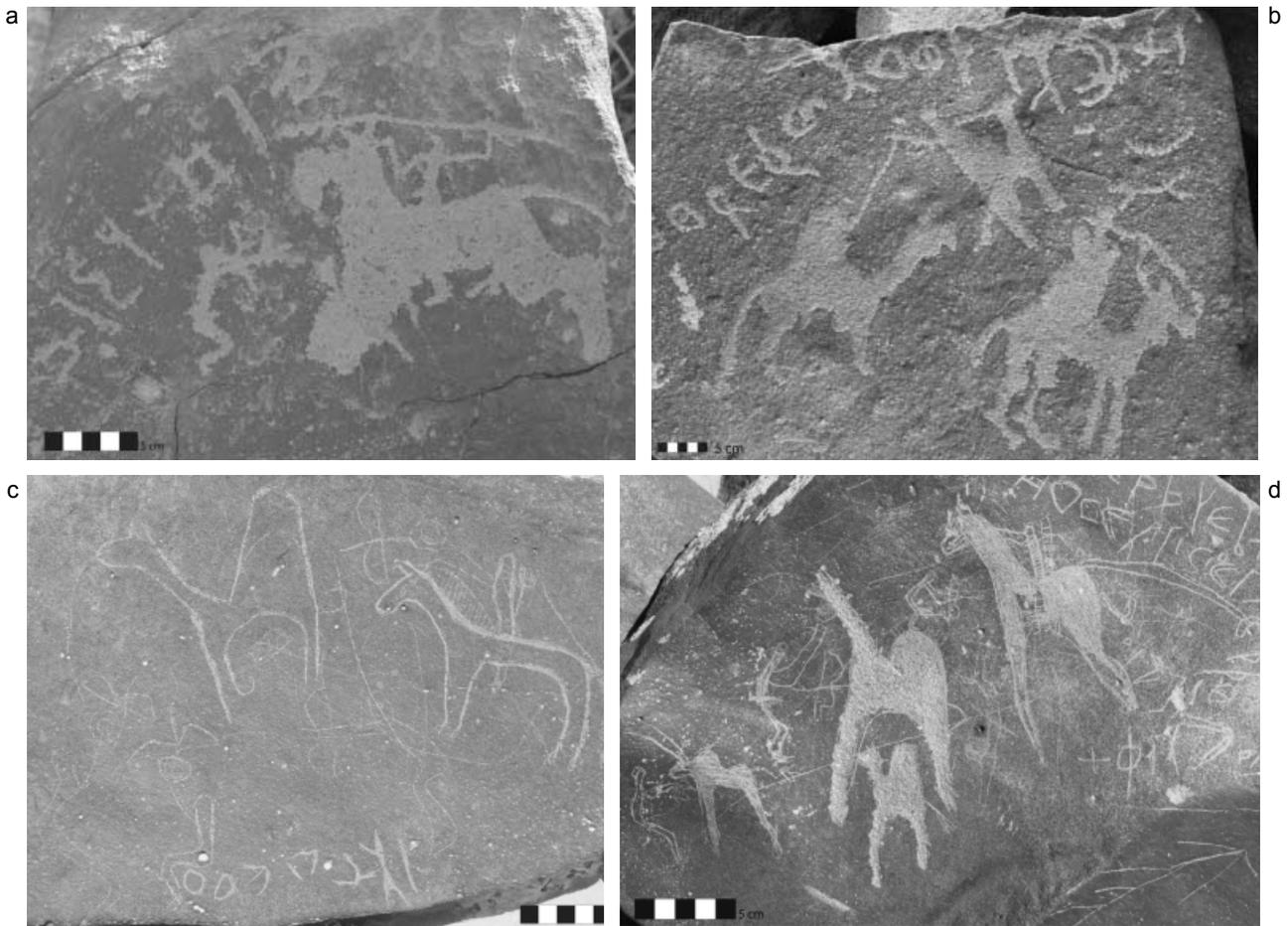


FIGURE 9.5a–d. (a) A male horse and its rider, armed with a lance, face a man with a bow and arrow. The inscription refers to “the horse(man).” Copyright Jebel Qurma Archaeological Landscape Project. (b) A possible raiding scene. One camel rider touches the dromedary camel with his or her lance/spear, possibly “claiming” the dromedary as booty. Copyright Jebel Qurma Archaeological Landscape Project. (c) A conflict scene that might depict raiding. Two thinly incised archers holding shields are on the bottom left. One appears to be holding the dromedary camel by a long lead rope. The dromedary’s foreleg is hobbled, indicated by the raised leg. A figure on an equid and another thinly incised archer appear to be the attackers. The rider also has a bow and a shield and a quiver on his or her back. It is the only figure on horseback with a bow. Copyright Jebel Qurma Archaeological Landscape Project. (d) Another possible raiding scene. A figure holds the dromedary camel and a bow, facing toward the two riders on horseback. Both riders have a lance in their hands. Another archer appears to be standing on the dromedary’s back or next to it, perhaps trying to ward off the attackers. A smaller dromedary stands underneath the larger one. On the left is a small hunting scene of an archer hunting an oryx. Copyright Jebel Qurma Archaeological Landscape Project.

Bradley (1997, 1998), May et al. (2017), and Ling and Cornell (2017). However, what many of these studies have in common is that there are archaeological finds for comparison (e.g., Bradley, 1997; Ling and Cornell, 2017) or valuable ethnohistorical information (e.g., May et al., 2017). Additionally, most investigated weaponry depictions are detailed and featured prominently in the rock art corpus, allowing for thorough analyses. This is not the case in the Safaitic rock art, and moreover there are few material finds of weaponry with which to compare, mainly due to the poor preservation conditions of the desert (cf. Akkermans and Brüning 2017). Still, the rock art corpus of the Jebel Qurma area is very suitable for a systematic study, as will be illustrated below. The depictions of weapons in the rock art can thereby provide information on a form of material culture that has perished over time.

In the Jebel Qurma rock art corpus, a total of 563 anthropomorphic figures are depicted, including those mounted on an animal. Of these, 271 are depicted holding an object, almost all of which are weapons. Fifty-eight of the objects could not be identified for various reasons. In general, neither the objects nor their users are depicted in much detail; therefore, identifying some of the objects, and especially weapons, can be difficult. However, it was possible to distinguish six material categories in the objects: “bow,” “lance/spear,” “shield,” “sword,” “lead ropes,” and “whips.” These types of objects can be seen being used on their own and combined with one another. Lead ropes and whips are used by humans only for or on animals, and are therefore not categorized as weapons and excluded from this study. The shields, although not technically a weapon, are considered part of the weaponry equipment as defensive gear. This leaves 257 figures holding a weapon, a combination of weapons, or an unclear object, the majority of which are probably weapons (Figure 9.6a). Weapons are depicted being used by both anthropomorphs on foot (120 figures) and figures mounted on an animal (79 figures) (Table 9.2). The majority of these are equids, probably either horses or mules/hinnies, but there are a few riders on dromedary camels.

Most of the objects held by anthropomorphic figures are bows. Ninety-nine figures are handling a bow and arrow; only one is on horseback. In eight cases, the anthropomorphic figure is holding a bow and has a quiver on his/her back (Figure 9.6b). The shape of the bows is very uniform; the bows are consistently and without exception depicted in an “m” shape. This “m” shape is reminiscent of the shape of the so-called “double-recurve composite bow.” The earliest appearance of composite bows in Mesopotamia dates to the third millennium BC (Miller, McEwen, and Bergman 1986: 183). Literary evidence suggests that from the second half of the second millennium BC onward, the composite bow can also be observed in the Levant (Zutterman, 2003, 123). The shape of the double-recurve composite bow is the result of its structural composition: in order to withstand and adapt to the pressure and tension on the bow’s body when the bow is drawn, several different types of material were used, such as wood, bone, horn, and sinew (Bowden 2012: 44). The design and the choice of materials makes the composite bow much more efficient than the preceding technologies of the self-bow or the laminated bow (Loades 2016: 5). The fabrication process of double-recurve composite

TABLE 9.2. The types of objects and combination of objects held by anthropomorphs on foot and held by riders.

Object	N of anthropomorphs on foot	% of anthropomorphs on foot with objects	N of riders	% of riders with objects
Bow	86	58.1%	0	0.0%
Bow + lead rope	1	0.7%	0	0.0%
Bow + quiver	8	5.4%	0	0.0%
Bow + shield	3	2.0%	0	0.0%
Bow + quiver + shield	0	0.0%	1	0.9%
Lance/spear + lead rope	2	1.4%	0	0.0%
Shield	1	0.7%	0	0.0%
Shield + uncl. object	1	0.7%	0	0.0%
Lance/spear	1	0.7%	67	61.5%
Lance/spear + shield	6	4.1%	6	5.5%
Lance/spear + sword	0	0.0%	1	0.9%
Sword	5	3.4%	1	0.9%
Sword + shield	6	4.1%	3	2.8%
Uncl. object	28	18.9%	30	27.5%
Total	148	100.0%	109	100.0%
No object	124		168	
Total anthropomorphs on foot/riders	272		277	

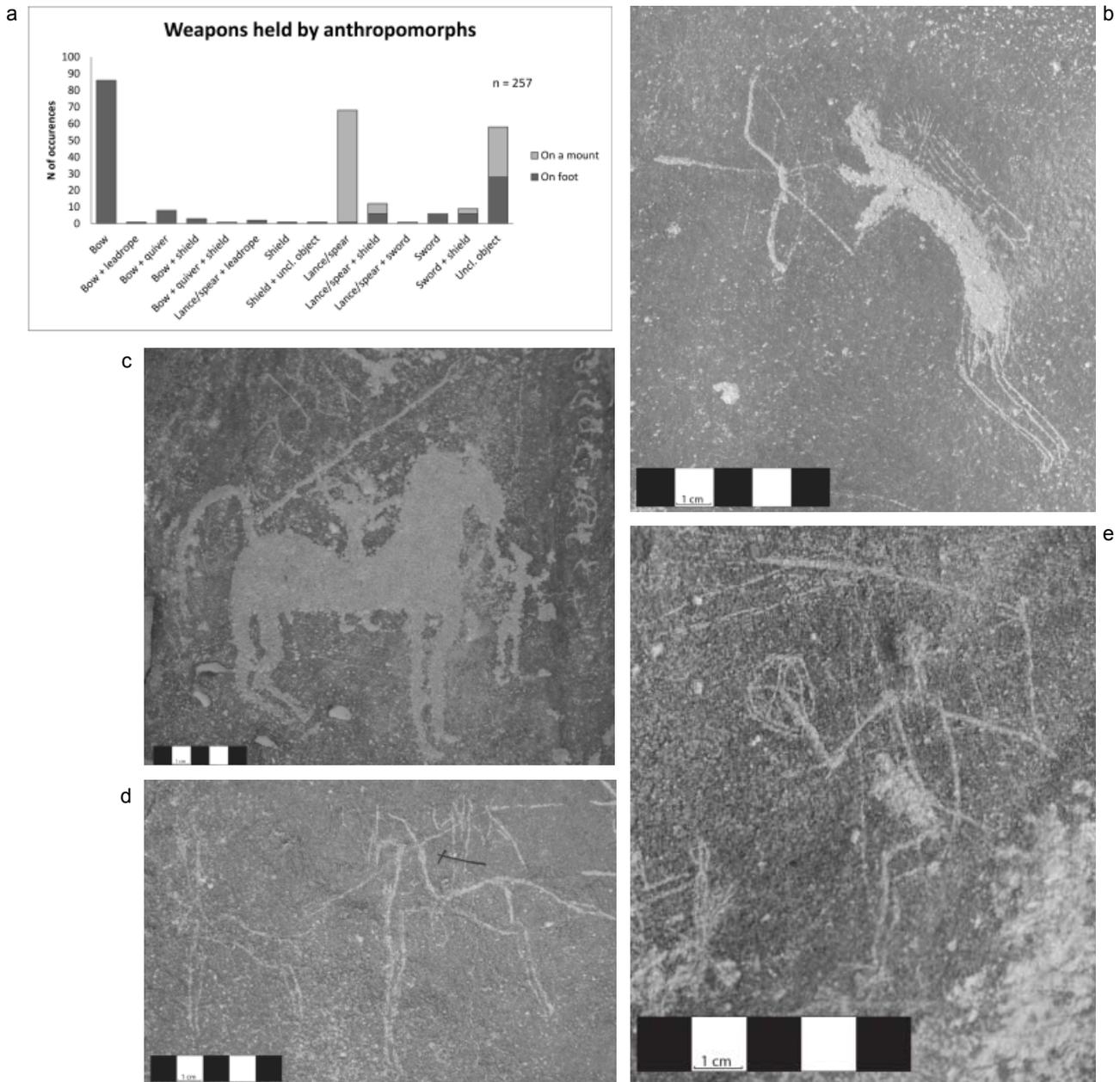


FIGURE 9.6a–e. (a) Stacked bar chart showing the types of weapons, including combinations, and number of anthropomorphic figures holding them. The unidentifiable objects (“uncl.”) are also included. Figures mounted on an animal are displayed in light gray, and figures on foot are indicated by dark gray. Copyright Nathalie Østerled Brusgaard and Keshia Akkermans. (b) Depiction of an archer with a double-recurve composite bow, which is characterized by its “m” shape. Also note the quiver carried on the figure’s back, with the arrows sticking out from the top. Copyright Jebel Qurma Archaeological Landscape Project. (c) Figure with a spear/lance seated on an equid. This object is most likely to be a lance due to its length in relation to the figure holding it. To the right a figure is depicted holding the equid by a lead rope. Copyright Jebel Qurma Archaeological Landscape Project. (d) Rider on an equid holding a lance and carrying a sword at the waist (the sword is traced in dark gray for clarity). Note the way the sword is carried at the waist and the short diagonal bar crossing the shaft. The rider is hunting an oryx. Copyright Jebel Qurma Archaeological Landscape Project. (e) Example of a small round shield with a cross motif on it. The other object the anthropomorph is holding is probably a spear rather than a sword, based on the context of this figure (depicted in a scene of several anthropomorphs hunting/attacking a lion). Copyright Jebel Qurma Archaeological Landscape Project.

bows was a lengthy one, and the making of a proper composite bow would have likely demanded a considerable degree of patience, experience, and specialization on the part of craftsmen (Bowden 2012; Loades 2016; Miller et al. 1986). Taking these factors into account, it is likely that composite bows were made in a sedentary environment in large batches of several hundred at a time (Miller et al. 1986).

The second largest weapon category is that of the lance/spear: eighty-two anthropomorphic figures are holding what could be a spear or lance. Interestingly, by far the majority of these are held by anthropomorphs seated on a mount (74 figures versus 9 on foot) (Figure 9.6c). As is already suggested by the name given to this weapon category, differences in length and mode of use suggest more than one subcategory of these “stick weapons.” According to Potts’s (1998: 18) criteria, “spear” refers to a “light projectile which could be thrown over a considerable distance at an enemy and for which the term ‘javelin’ is sometimes employed.” Conversely, a “lance” is “a much heavier and longer weapon, which, although it could be thrown at a short distance, was more commonly hand-held and used for thrusting in close combat” (Potts 1998: 183). The majority of the lances/spears depicted in the rock art range from fairly long to very long in relation to the figures using them and are therefore probably lances, whereas the shorter spears/lances are more likely to represent spears instead. In addition, the objects that are likely to be lances have a stronger association with figures on equids and camelback. The potential spears are most often held by figures on foot and are more often accompanied by a shield. Both the spears and the lances are used in hunting scenes as well as conflict/combat scenes.

The last and most problematic weapon category is the category of “swords.” Due to the lack of detail in the anthropomorphic figures and weapon depictions, it is difficult to distinguish swords from the lance/spear category. One identifier might be that if the object is being held at the outer end instead of the middle and is relatively short in length, then it might be a sword. A more convincing depiction is a figure on horseback who is carrying a stick-like object at the waist (Figure 9.6d). In this depiction, a shorter bar is depicted diagonally crossing the shaft. This short bar probably portrays the cross guard of a sword. Further strengthening the assumption that this is indeed a sword are the location and position in which the object is carried on the body: the object is hanging from the hips as a sword would do when hanging from a sheath. Macdonald (2012: 282) has also observed that in Safaitic rock art, figures on horseback are rarely seen wielding a sword but occasionally appear with a sword at their belts. Based on these criteria, sixteen swords were identified in the rock art, but these results are tentative.

Lastly, a total of twenty-seven figures are depicted with a shield in hand. Most shield use is accompanied with a weapon, the majority of which are lance/spears and swords. Despite the fact that it seems near impossible to fire a bow while holding a shield, three figures are carrying both a bow and a shield. All shields are small and round, but the patterning on the shields varies (Figure 9.6e). Most of the shields have patterns carved into them, ranging from cross-hatching, crosses, and radiating lines to feather-like carvings and circles. Cross-hatching might imply leather slabs, while the circles are most likely depictions of the shield boss or *umbo*, the system that attaches the grip of the shield to the shield using a convex, round piece of material in the center of the shield. Lines and cross-hatching are not limited to the shields; these patterns are also sometimes carved into the bodies of anthropomorphic and zoomorphic figures (Figure 9.4a and c) (Brusgaard 2019). It is therefore unclear whether the patterns are of a functional or decorative nature.

Of the 199 weapon depictions, 126 of them are shown in the context of either a hunting or a conflict/combat scene. In hunting scenes, the bow and arrow is the most prevalent weapon: 57 archers, 30 lance/spear wielders, and only 4 (albeit questionable) swordsmen are shown in hunting scenes. Aside from three depictions of probable spear wielders on foot, all figures associated with lances/spears are riders, whereas none of the archers or swordsmen are mounted. The type of weapon used and its user appear to depend on the hunting technique being used, as described above. In the combat/conflict scenes, the preference for certain weapon types is less pronounced. Bows and lances/spears are depicted equally often, each with a total of fifteen depictions. Only one of the archers is mounted, while ten of the lance/spear wielders are mounted. Swords are depicted on only five occasions, all used by figures on foot. The more heterogeneous distribution in the combat/conflict scenes might be explained by taking into account that different weapon types are suitable depending on the distance of fighting. The sword is most useful at short range, thrusting weapons such as the lance are best at medium range, and the spear and bow and arrow are optimal weapons at long range.

Discussion

Reviewing the results of our study on the scenes and depictions of weapons in the rock art of the Jebel Qurma region, we can draw a number of conclusions. First, there are three dominant themes within the scenes. One theme is scenes of a pastoral or domestic nature, including young animals, mostly dromedaries, nursing from their mother and humans leading or holding animals, again mostly dromedaries. Scenes with a pastoral theme make up approximately 22 percent of the 168 scenes. The second theme is combat and conflict, which consists of scenes featuring horsemen fighting each other, a horseman fighting one or more anthropomorphs on foot, and scenes that appear to depict raiding. The third and most dominant theme is hunting, which includes humans hunting animals and animals hunting other animals. Both solitary and cooperative types of hunting are identifiable in the scenes. The former are more common.

The second observation that can be drawn from the results is that out of all the weaponry depicted in the rock art, there are clearly two main weapons: the bow and arrow—most likely the composite bow—and the lance/spear. The majority of the latter are probably lances used by riders; probably only a minority are spears, used on foot. In total, excluding the unclear objects, there are 199 anthropomorphic figures holding weapons. Of these figures, 99 are holding a bow (or a combination of a bow and another weapon) and 83 of them are holding a lance/spear (or a combination of a lance/spear and another weapon). Swords are difficult to identify but may be depicted in at least six instances. Shields are usually seen in combination with another weapon. They are often carved with patterns, but the meaning of these patterns is still unclear. The majority of the depicted weapon use is shown in the context of a hunting or conflict/combat scene. The type of weapon used seems to depend on a number of factors: in the hunting scenes the bow is the primary weapon of choice, whereas in combat/conflict scenes the distribution of weapon types is much more equally dispersed.

This brings us to our third observation, based on the hunting and combat/conflict scenes and the weaponry. Although there is some variation within these scenes and within the use of weapons, there are a number of clear patterns. There is an apparent distinction between the use of the bow and the use of the lance/spear. The former is almost exclusively used by a person on foot. It is used in some combat and conflict scenes by humans fighting one another, but it is primarily depicted in hunting scenes. In these scenes, we tend to see the lone archer hunting a wild ass or an ibex/gazelle, or a group of archers hunting with or without the help of dogs. The lance/spear is almost exclusively used by a person on horseback, in which case these weapons probably depict lances. They are often used in combat/conflict scenes where the rider is facing a person on foot. Additionally, they are often used by the solitary hunter on horseback, who in the majority of cases is hunting a lone oryx. Regarding the scenes depicting animal hunters, there is a dominant theme as well: the solitary hunter and the pack hunters, the majority of which are canids, tend to be depicted hunting flocks of ostriches. Thus, distinct patterns are observable in the depictions of hunting and fighting in the Jebel Qurma rock art, from the type of hunter or fighter portrayed and his or her weapon, to the type of hunting technique and the prey being hunted.

These findings provide interesting new insights into the Safaitic rock art and the people who carved it. Our study on the scenes and weapons depicted in the Jebel Qurma rock art shows that these petroglyphs fit well into the historical context of the area and furthermore provide new information, outlined below.

Historical Context

The way in which weapons are used in the rock art at Jebel Qurma often coincides with descriptions in contemporary and later texts. Early Arabic poetry specifically mentions all three of the main weapon categories (bows, swords, and lances/spears) seen in the rock art corpus of the Jebel Qurma area (Schwarzlose 1886: 45). In particular, in pre-Islamic poetry (oral poetry thought to originally have been composed in the sixth and seventh centuries AD and later written down in the eighth century), the hunt is a frequent subject matter, with the archer and his faithful hounds and their prey, usually oryx or ostriches, playing important roles (Smith 1990; Stetkevych 1999). Additionally, the preference for lances as the primary weapon of choice while riding is well attested in Classical Greek and Roman writings (Gordon 1953; Potts 1998), so the

association between lance use and riders in conflict is not unexpected. However, it is somewhat surprising that the lance is also the primary weapon of mounted hunters and that the bow is used almost exclusively by people on foot. The unparalleled technical advantages of the double-recurve composite bow, especially on horseback, were already well known in ancient times (Loades 2016: 10). The composite bow could be held drawn for a longer time with less energy input, allowed for a more precise aim and greater range, and it was highly portable due to its relatively small size (Bowden 2012; Zutterman 2003). The recurring depictions of riders using lances and archers on foot, whether fighting or hunting, does not necessarily contradict what is known from classical sources but instead might therefore point to specific cultural conventions among the desert nomads.

The frequent depiction of the composite bow in the rock art is interesting because the carvers were according to their activities in their texts, nomadic or at least semi-nomadic (cf. Macdonald 1992; 1993). Yet the fabrication of this type of bow requires careful handling and drying over considerable amounts of time. If the scenes are accurate depictions of nomadic life in the desert (see further below), it is worth considering whether they were able to make these bows themselves or, conversely, where they obtained these bows from and whether their doing so then indicates further types of interaction between the desert and the sedentary areas, as evidenced by the Safaitic texts (cf. Macdonald 2014). This issue requires further exploration.

The three themes recognizable in the scenic compositions—pastoralism, hunting, and conflict—largely match what we know about this region from other sources. From the Safaitic inscriptions we know that conflict was part of the authors' world view. The texts mention raiding parties, (cavalry) troops, enemies, and desire for plundered goods (Al-Jallad 2015; OCIANA 2017). The extent to which these are portrayed in the rock art, including different types of weapons and weapon use, reflects the importance of conflict and raiding in the ideology of the desert nomads. Furthermore, the several scenes featuring dromedaries in the central role, representing the raiding of these animals, speak to the importance of this animal (Brusgaard 2020). Like conflict, pasturing or activities associated with it, such as migrating with herd animals and watering, form a common theme in the inscriptions. The domestication of the dromedary camel and its introduction into an already semi-pastoral subsistence in the Arabian Peninsula after 3000 BP (Magee 2014) also makes it plausible that the desert societies of this region had a pastoral or semi-pastoral mode of subsistence. The depiction of seemingly domestic, pastoral scenes such as infant domestic animals nursing and people leading domestic animals is thus not surprising.

Lastly, the predominance of hunting and the interaction with and between animals stands out as a theme in the Jebel Qurma rock art. Other than the signing of images of wild animals (e.g., "By [name] is the lion"), the inscriptions do not allude to this theme at all in the Jebel Qurma corpus and do so only very rarely in other corpora. Therefore, based on the epigraphic evidence, scholars trying to reconstruct the societies behind the Safaitic texts have done so primarily in terms of pastoralism and nomadism (cf. Macdonald 1992; 1993). The scenic compositions in the Jebel Qurma rock art in no way contradict this and in fact support it in many ways, but they do offer an additional insight into the ideological significance of hunting and wildlife to these peoples. In this respect the Safaitic rock art from Jebel Qurma finds comparison with the (roughly) contemporary Himaic rock art from the southern Jordanian desert, which depicts two major themes: dromedary camels and hunting (Corbett 2010; King 1990).

Safaitic Rock Art and Its Carvers

How we are to subsequently interpret these findings in terms of what the themes reflect and what they can tell us about the desert societies is a matter that requires further investigation on several levels. On the one hand, it will involve further comparison with archaeological findings from Jebel Qurma and the Black Desert. On the other, more discussion is needed on the question of what the images signified for their makers and what they portray. Whether we are, for example, to interpret the dominance of hunting as a reflection of subsistence strategies in the desert or socially significant activities depends on the extent to which these images express a degree of reality or a representation of the day-to-day reality of these societies. Of course, "we cannot expect to read it [rock art] as a mirror of society" (Walderhaug 1998: 298). However, it can inform

us about past world views and aspects that were important to these societies. Scenes in particular provide insights into social organization, practices, and activities, many of which are inaccessible through other parts of the archaeological record (May and Domingo Sanz 2010: 35). For this reason, an in-depth study of scenes and themes in the rock art opens up new possibilities for investigating the social practices, subsistence strategies, and regional connections of the societies that carved these pictorial and textual engravings. For example, the abundance of hunting scenes in the rock art, and wild animals in general (cf. Brusgaard, 2019), may help to challenge preconceived notions of what a pastoralist society entails and what would have been important to the supposed pastoralist worldview.

While this is a matter for further research, this study on scenes and weapons has already revealed some new insights into the Safaitic rock art and its makers. Most notably, it is clear that there are specific, recurrent patterns in the rock art compositions. This indicates that there were set rules to follow in what to portray and how. These subjects were selective, as not all aspects of (daily) life are depicted; for example, domestic human activities are not portrayed in the Jebel Qurma rock art, with the exception of two possible but very unclear sexual scenes.

The scenes are thus by no means random depictions of narratives of interest to the individual carver, but a product of cultural and social norms. Interestingly, this matches what has been proposed for the Safaitic inscriptions by Al-Jallad (2015: 3), who argues that the texts are not forms of “unstructured self-expression” but highly formulaic and uniform communication, and that the subject matter of the inscriptions is limited and selective. This study on the rock art reveals similar insights, reaffirming the complementary nature of the two types of engravings.

On a final note, these forms of expression and themes may have varied within the Black Desert region, so the Jebel Qurma rock art cannot be assumed to be representative of the entire area. Indeed, there is no evidence to suggest that the people who carved Safaitic engravings were all part of one cultural or ethnic community, as has already been emphasized elsewhere (Al-Jallad 2015; Macdonald 2009). As mentioned earlier, other corpora of engravings show images that appear to depict music making, dancing, and ploughing. There is no indication of the portrayal of these themes in Jebel Qurma.

Conclusion

This study is part of ongoing research, and therefore many angles of investigation still need to be examined. However, we hope that with the data presented in this chapter we have revealed new insights into the scenes and material culture depicted in Black Desert rock art, an understudied rock art corpus. In particular, this study has revealed the occurrence of specific, recognizable patterns within the scenic compositions, including figures, interactions, and activities. Additionally, the dominant themes in the scenes and the use of weapons fit well with what we know of the historical context, while providing new insights into this period and region. Finally, we have also endeavored hereby to contribute to opening up new questions for debate in rock art research, both in the analysis of the various components of rock art imagery, such as weaponry, and in the study of scenes as a whole.

Nathalie Brusgaard is a postdoctoral researcher at the University of Groningen. Nathalie earned a PhD from Leiden University for her work on the rock art of nomadic herders in the Black Desert of Jordan. Her research focused on how rock art can reveal past human-animal relationships and human-landscape interactions. Nathalie specializes in social zooarchaeology and rock art studies and has worked on numerous fieldwork projects in the Netherlands, Germany, Jordan, and the United States.

Keshia Akkermans is a graduate student at Leiden University, majoring in the archaeology of the Near East. In 2017 she received a bachelor's degree based on her thesis on weapon depictions in the rock art of the Jebel Qurma area in Jordan. She is currently pursuing a research master's degree, focusing on the Late Bronze Age burial assemblages at Tell Sabi Abyad in Syria.

Notes

1. Female authors are very rare. In the known Safaitic corpora and in other Ancient North Arabian corpora of inscriptions, there are only a few rare examples of texts signed by women (Norris 2017).
2. Due to the difficulty in distinguishing between different types of equids, this study will use the generic term “equid” unless a specific member of this family, such as a horse or mule, can be recognized (cf. Brusgaard 2019; Littauer and Crouwel 1979; Macdonald 2019). The term “horseback” will be used as a general term for riders on any type of equid.
3. For an explanation of the identification of the animal motifs in the rock art see Brusgaard (2019).
4. ASWS 303 (Banī 1999).
5. C 908 (Ryckmans 1950–1951).

References

- Ababneh, M. I. 2005. *Neue safaitische Inschriften und deren bildliche Darstellungen*, vol. 6. Aachen: Shaker Verlag.
- Akkermans, P. M. M. G., and M. L. Brüning. 2017. Nothing but Cold Ashes? The Cairn Burials of Jebel Qurma, Northeastern Jordan. *Near Eastern Archaeology* 80(2), 132–39.
- Al-Jallad, A. 2015. *An Outline of the Grammar of the Safaitic Inscriptions*, vol. 80). Leiden: Brill.
- Al-Jallad, A. 2016. An Ancient Arabian Zodiac. The Constellations in the Safaitic Inscriptions, Part II. *Arabian Archaeology and Epigraphy* 27: 84–106.
- Al-Manaser, A. Y. K. 2008. *Ein Korpus neuer safaitischer Inschriften aus Jordanien*, vol. 10. Aachen: Shaker Verlag.
- Al-Manaser, A. Y. K., and M. C. A. Macdonald. 2017. *The OCIANA Corpus of Safaitic Inscriptions, Preliminary Edition*. Edited by A. Y. K. Al-Manaser. The Online Corpus of the Inscriptions of Ancient North Arabia (OCIANA). Oxford: The Khalili Research Centre.
- Almathen, F., P. Charruau, E. Mohandesan, J. M. Mwacharo, P. Orozco-terWengel, D. Pitt, . . . B. De Cupere. 2016. “Ancient and Modern DNA Reveal Dynamics of Domestication and Cross-continental Dispersal of the Dromedary.” *Proceedings of the National Academy of Sciences* 113(24): 6707–12.
- Banī, A. 1999. “Dirāsāt nuqūš šafawiyyah ġadīdah min ġanūb wādī sārāh/ al-bādiyah al-urduunniyyah aš-šamāliyyah.” Unpublished MA thesis, Yarmouk University. Retrieved 13 August 2018 from http://krc.orient.ox.ac.uk/ociana/corpus/pages/OCIANA_0031861.html.
- Betts, A. V. G. 1987. “The Hunter’s Perspective: 7th Millennium BC Rock Carvings from Eastern Jordan.” *World Archaeology* 19(2): 214–25.
- Bowden, B. L. J. 2012. “The Origin and the Role of the Composite Bow in the Ancient Near East.” *Ancient Warfare* 5: 42–54.
- Bradley, R. 1997. *Signing the Land: Rock Art and the Prehistory of Atlantic Europe*. London: Routledge.
- Bradley, R. 1998. “Daggers Drawn: Depictions of Bronze Age Weapons in Atlantic Europe, in C. Chippindale and P. S. C. Taçon, ed., *The Archaeology of Rock-Art*, 130–45. Cambridge: Cambridge University Press.
- Brusgaard, N. Ø. 2019. *Carving interactions: Rock Art in the Nomadic Landscape of the Black Desert, North-Eastern Jordan*. Oxford: Archaeopress.
- Brusgaard, N. Ø. 2020. “Depicting the Camel: Representations of the Dromedary Camel in the Black Desert Rock Art of Jordan.” In *Landscapes of Survival: The Archaeology and Epigraphy of Jordan’s Northeastern Desert*, ed. P. M. M. G. Akkermans and A. Al-Jallad, 285–302. Leiden: Sidestone Press.
- Corbett, G. J. 2010. “Mapping the Mute Immortals: A Location and Contextual Analysis of Thamudic E/Hismaic Inscriptions and Rock Drawings from the Wādī Hafīr of Southern Jordan.” PhD. Dissertation, University of Chicago.
- Della Puppa, C. Forthcoming. “The Safaitic Scripts: An Ethno-palaeographic Investigation.” PhD dissertation, Leiden University.
- Gordon, D. H. 1953. “Swords, Rapiers and Horse-Riders.” *Antiquity* 27(106): 67–78.
- King, G. M. H. 1990. “Early North Arabian Thamudic E: A Preliminary Description Based on a New Corpus of Inscriptions from the Hisma Desert of Southern Jordan and Published Material.” PhD dissertation, SOAS University of London.
- Ling, J., and P. Cornell. 2017. “Violence, Warriors, and Rock Art in Bronze Age Scandinavia.” In *Feast, Famine or Fighting? Multiple Pathways to Social Complexity*, ed. R. J. Chacon and R. G. Mendoza, 15–33. Cham: Springer.
- Littauer, M. A., and J. H. Crouwel. 1979. *Wheeled Vehicles and Ridden Animals in the Ancient Near East*, vol. 1. Leiden: Brill Academic Publisher.
- Loades, M. 2016. *The Composite Bow*. Oxford: Osprey Publishing.
- Macdonald, M. C. A. 1990. “Camel Hunting or Camel Raiding?” *Arabian Archaeology and Epigraphy* 1(1): 24–28.
- Macdonald, M. C. A. 1992. “The Seasons and Transhumance in the Safaitic Inscriptions.” *Journal of the Royal Asiatic Society (Third Series)* 2(01): 1–11. doi:doi:10.1017/S1356186300001760
- Macdonald, M. C. A. 1993. “Nomads and the Ḥawrān in the Late Hellenistic and Roman Periods: A Reassessment of the Epigraphic Evidence.” *Syria* 70(3/4): 303–413.

- Macdonald, M. C. A. 2006. "Burial between the Desert and the Sown: Cave-Tombs and Inscriptions Near Dayr al-Kahf in Jordan." *Damaszener Mitteilungen* 15: 273–301.
- Macdonald, M. C. A. 2009. *Literacy and Identity in Pre-Islamic Arabia*. Surrey: Ashgate.
- Macdonald, M. C. A. 2012. "Goddesses, Dancing Girls or Cheerleaders? Perceptions of the Divine and the Female Form in the Rock Art of Pre-Islamic North Arabia." In *Dieux et déesses d'Arabie. Images et représentations. Actes de la table ronde tenue au Collège de France (Paris) les 1er et 2 octobre 2007*, ed. I. Sachet and C. J. Robin, vol. 7, 261–97. Paris: De Boccard.
- Macdonald, M. C. A. 2014. "Romans Go Home? Rome and Other 'Outsiders' as Viewed from the Syro-Arabian Desert." In *Inside and Out: Interactions between Rome and the Peoples on the Arabian and Egyptian Frontiers in Late Antiquity*, ed. J. H. F. Dijkstra and G. Fisher, 145–64. Leuven: Peeters.
- Macdonald, M. C. A. 2019. "Horses, Asses, Hybrids, and Their Use as Revealed in the Ancient Rock Art of the Syro-Arabian Desert." In *Equids in the Ancient Near East, Egypt, and Arabia: Proceedings of a Conference in Memory of Mary Aitken Littauer*, ed. P. Raulwing K. M. Linduff and J. H. Crouwel, 149–168. Oxford: BAR Publishing.
- Magee, P. 2014. *The Archaeology of Prehistoric Arabia: Adaptation and Social Formation from the Neolithic to the Iron Age*. Cambridge: Cambridge University Press.
- May, S. K., and I. Domingo Sanz. 2010. "Making Sense of Scenes." *Rock Art Research: The Journal of the Australian Rock Art Research Association (AURA)* 27(1): 35–42.
- May, S. K., D. Wesley, J. Goldhahn, M. Litster, and B. Manera. 2017. "Symbols of Power: The Firearm Paintings of Madjedbebe (Malakunanja II)." *International Journal of Historical Archaeology* 21: 690–707.
- Miller, R., E. McEwen, and C. Bergman. 1986. "Experimental Approaches to Ancient Near Eastern Archery." *World Archaeology* 18(2): 178–95.
- Norris, J. 2017. "A Woman's Hismaic Inscription from the Wādī Ramm Desert: AMJ 2/J. 14202 (Amman Museum)." *Arabian Archaeology and Epigraphy* 28(1): 90–109.
- OCIANA. 2017. *The Online Corpus of the Inscriptions of Ancient North Arabia*. Retrieved 28 August 2018 from <http://krc.orient.ox.ac.uk/ociana/index.php/database>
- Potts, D. T. 1998. "Some Issues in the Study of the Pre-Islamic Weaponry of Southeastern Arabia." *Arabian Archaeology and Epigraphy* 9(2): 182–208.
- Rosen, S. A., and B. A. Saidel. 2010. "The Camel and the Tent: An Exploration of Technological Change among Early Pastoralists." *Journal of Near Eastern Studies* 69(1): 63–77.
- Ryckmans, G. 1950–1951. *Corpus Inscriptionum Semiticarum: Pars Quinta, Inscriptiones Saracenicae Continens, Tomus I, Fasciculus I, Inscriptiones Safaiticae*. Paris: E Reipublicae Typographeo. doi:http://krc.orient.ox.ac.uk/ociana/corpus/pages/OCIANA_0004113.html.
- Schwarzlose, F. W. 1886. *Die waffen der alten Araber aus ihren dichtern dargestellt: ein beitrag zur arabischen alterthumskunde, synonymik und lexicographie, nebst registern*. Hildesheim: Georg Olms Publishers.
- Smith, G. R. 1990. "Hunting Poetry (Ṭardiyyāt)." In *Abbasid belles-lettres*, ed. J. Ashtiany, T. M. Johnstone, J. D. Latham, and R. B. Serjeant, 167–184. Cambridge: Cambridge University Press.
- Stetkevych, J. 1999. "The Hunt in Classical Arabic Poetry: From Mukhaḍḍam "Qaṣīdah" to Umayyad "Ṭardiyyah." *Journal of Arabic Literature* 30(2): 107–27.
- Walderhaug, E. M. 1998. "Changing Art in a Changing Society: The Hunters' Rock-Art of Western Norway." In *The Archaeology of Rock-Art*, ed. C. Chippindale and P. S. C. Taçon, 285–301. Cambridge: Cambridge University Press.
- Zutterman, C. 2003. "The Bow in the Ancient Near East." *Iranica Antiqua* 38: 119–65.